MAYER, BROWN & PLATT

190 SOUTH LA SALLE STREET

CHICAGO, ILLINOIS 60603-3441

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August 29, 2001

Ms. Mary Fulghum
United States Environmental Protection Agency - Region 5
Office of Regional Counsel
77 West Jackson Boulevard
Chicago, IL 60604

Re: Request for Negative Declaration regarding property located at 530 North Lake Shore Drive, Chicago, Illinois (the "Property")

Dear Mary:

Enclosed please find copies of the final report on the radiological investigations for the Property prepared by STS Consultants and a cover letter conveying the report to Fred Micke and Verneta Simon. As you can see from a review of the report, the walkover surveys and subsurface investigations did not reveal the presence of any materials related to the former Lindsay Light operations, some of which have been found at sites in the vicinity of the Property. The report also documents the lack of any other radiological concern.

Based on this report and the previous data that has been submitted to USEPA regarding the Property, I request that USEPA - Region 5 issue a No Current Superfund Interest letter to the current site owner, 530 Lake Shore Drive, L.L.C. USEPA's Policy on the Issuance of Comfort/Status Letters authored by Steven A. Herman, formerly Assistant Administrator of the Office of Enforcement and Compliance Assurance, provides for such letters for sites located near but not within the boundaries of a CERCLIS site. The Property qualifies for such a letter because it is located in the vicinity of the Lindsay Light II Superfund Site and because the enclosed report and the previously submitted data demonstrate that the Property has not been impacted by releases from the Superfund Site.

We appreciate your prompt attention to this request. If you have any questions regarding the Report or our request, please contact me at your convenience.

Sincerely,

Thomas W. Dimond

Thomas W. Dimond

Enclosure
cc: (without enclosure)
Alan Lev, 530 Lake Shore Drive, L.L.C.
Richard Zisook, Sandz Development
Richard Berggreen, C.P.G., STS Consultants

STS CONSULTANTS

CONSULTING ENGINEERS

Sandz Development
Radiological Investigation
530 North Lake Shore Drive
Chicago, Illinois

1-32194-XH
August 28, 2001

STS Consultants, Ltd.
Solutions through Science & Engineering

August 28, 2001

Mr. Fred Micke, On-Scene Coordinator
Ms. Verneta Simon, On-Scene Coordinator
U. S. Environmental Protection Agency
Region 5
77 W. Jackson Boulevard, SE-5J
Chicago, Illinois 60604

RE: Radiological Investigations at 530 North Lake Shore Drive, Chicago, Illinois - STS Project No. 1-32194-XH

Dear Mr. Micke and Ms. Simon:

Enclosed please find two copies of the final report on the radiological investigations for the property located at 530 North Lake Shore Drive in Chicago, Illinois. As detailed in the report, STS Consultants, Ltd. (STS) did not discover materials on the site related to the historic Lindsay Light operations in the area or otherwise of radiological concern. Under separate cover, we understand that the site owner, 530 Lake Shore Drive, L.L.C., has requested a letter expressing no further Superfund Program interest in the property.

STS appreciates your courtesy and cooperation working on this project. If you have any questions regarding this report, please contact me at 847-279-2500.

Regards,

STS CONSULTANTS, LTD.

Richard G. Berggreen, C.P.G.
Principal Geologist

cc: Alan Lev, Sandz Development
Richard Zisook, Sandz Development
Tom Dimond, Mayer, Brown & Platt

RADIOLOGICAL INVESTIGATION
530 NORTH LAKE SHORE DRIVE
CHICAGO, ILLINOIS

INTRODUCTION

This report presents the results of a gamma radiation survey and subsurface investigation for a property at 530 North Lake Shore Drive in Chicago, Illinois (Subject Site). The Subject Site is located at the northwest corner of Ohio Street and Lake Shore Drive (see Figure 1) and consists of approximately one-half acre. The site is proposed for development as a residential highrise constructed slab-on-grade with a foundation consisting of caissons and grade beams. A total of 77 caissons are to be installed.

Several properties in the vicinity of the Subject Site have been found to contain contamination from the former processing of thorium-bearing mineral sands. The contamination consists of elevated concentrations of thorium, uranium and their radioactive decay products. The U.S. Environmental Protection Agency (USEPA), in correspondence dated December 22, 2000, requested a walkover survey of the site to measure gamma radiation levels if the pavement that covered the site at that time was removed. This report and the investigations for this report were conducted with two objectives. First, the walkover survey work was to satisfy the request from the USEPA per their December 22, 2000 correspondence. Second, the caisson pothole survey and associated gamma spectroscopic analyses of selected samples were conducted in order to obtain sign-off from the USEPA that all requested investigations had been conducted, and that no additional investigation or remediation was required with regard to possible radioactive contaminants.

Several previous surface and subsurface radiological investigations have been conducted at the Subject Site. The results of these investigations were summarized in reports prepared by others and provided to USEPA. The results presented herein are limited to the results of the investigations conducted by STS Consultants, Ltd. (STS) and subcontractors contracted to STS.

SCOPE OF WORK

The scope of work for the radiological investigation of the Subject Site consisted of three tasks:

- Walkover Gamma Radiation Survey
- Caisson Pothole Survey
- Gamma Spectroscopic Analysis of Soil Samples

These tasks are described in the following sections.

Walkover Gamma Radiation Survey

A 5-meter grid was laid out over the Subject Site (see Figure 2). A walkover survey was conducted using a Ludlum 2221 rater-scaler and a 2 x 2 NaI probe. The probe was carried just above the ground surface and was unshielded. The unshielded probe provides for greater sensitivity, but is subject to influences from radiation source to the side and above the detector. A maximum gamma reading in counts per minute (CPM) was recorded for each 5 x 5-meter grid cell.

The initial survey was taken after removal of the asphalt pavement on the Subject Site (see Figure 2A). The asphalt was also surveyed as it was removed to confirm no elevated gamma radiation was present in the asphalt debris.

Upon removal of the asphalt, it was evident that the Subject Site was underlain by a second asphalt pavement and base course at the west end of the Subject Site, and a concrete slab at the east end. These pavements were also removed, screened to confirm the absence of elevated radiation, and a second walkover survey was conducted. These results are presented in Figure 2B.

Caisson Pothole Survey

Gamma radiation is effectively shielded by several feet of soil. As a result, the evaluation of deeper soils for potential contamination required subsurface survey data. Site development will include 77 caissons. Obstruction removal potholing provides an opportunity to survey the subsurface soils at those locations. For the purposes of radiation surveying approximately 50 percent of the potholes were surveyed for elevated radioactivity. Field representatives of USEPA verbally confirmed the adequacy of this number of subsurface survey locations.

The surveys were conducted by screening the excavation spoil using the Ludlum 2221 and 2 x 2 NaI probe. The excavation spoil pile was surveyed after each excavator bucket was dumped on the pile. Where measurements showed gamma values above typical background values, a sample was recovered. (Those samples were subsequently submitted under the gamma spectroscopy analysis task.) Figure 3 presents the maximum readings measured in the caisson potholes surveyed.

Gamma Spectroscopic Analysis of Soil Samples

On the basis of the field survey results from the caisson pothole screening, six samples were selected for gamma spectroscopy (gamma spec) analysis. The samples selected were from the six locations showing the highest measurements in the surveys of the excavated potholes. The samples were packed in 500 ml Marinelli beakers and delivered to our subcontractor analytical laboratory, RSSI in Morton Grove, Illinois for high resolution gamma spec analysis. This analysis is intended to identify the radionuclides present in the soils that are emitting the gamma radiation detected. Additionally, the quantity of the radioactive materials is measured. Through identification of the radionuclides and their concentrations, a determination can be made as to whether the gamma radiation is likely

from the thorium and uranium materials used at the vicinity industrial site or some other source, and whether the radioactivity exceeds a USEPA specified cleanup level.

RESULTS

The results of the walkover surveys are presented in Figures 2A and 2B.

After the initial asphalt pavement was removed but with the underlying pavement and concrete still in place, the soil was still subject to some shielding. At the east end underlain by concrete, readings ranged from the upper 6,000 CPM range to about 8,000 CPM. At the west side of the Subject Site underlain by a second asphalt pavement, readings ranged from about 8,000 CPM to about 10,000 CPM. These levels are well below USEPA cleanup levels for Ludlum survey values.

The remaining asphalt pavement and concrete slabs were subsequently removed. That debris was surveyed before removal from the Subject Site to confirm no material exhibiting elevated gamma readings were present.

Following removal of the asphalt and concrete, readings ranged from mid-7,000 CPM to 9,000 to 10,000 CPM, with isolated locations in the 10,000 to 11,000 CPM range. The higher readings, in the 10,000 to 11,000 CPM range, tend to be near the north margin of the site and may reflect "shine", radiation originating from the brick building adjacent to the north. Brick may exhibit natural radioactivity as a result of the minerals in the clay used in their manufacture. The measured values found no location which exceeded the cleanup threshold, based on these field measurements. The gamma count which represents the cleanup threshold is 19,797 CPM for the instrument used.

Caisson potholing gamma surveys showed several locations with readings above those typical of the Subject Site. Those locations tended to correlate with the higher surface

survey locations, along the north part of the Subject Site. Some of the higher readings may be the result of survey data taken from the walls of the excavations (less than four feet deep) where "shine" from the other walls of the excavation results in increased gamma values. Elevated readings may also reflect actual increases in gamma emitting materials in the soil. Analysis of the soils is required to evaluate the cause of the increased gamma values.

The highest values measured were from caisson potholes on the A and B column lines, the two northernmost lines. None of the measured values exceeded the cleanup threshold of the instrument used, 19,797 CPM.

Soil samples from the locations with the highest gamma readings were submitted for gamma spec analysis. The results of those analyses are attached as Appendix A. The analyses show all results are below the cleanup criteria of 7.1 pCi/g total radium (established by USEPA for the nearby Lindsay Light II Superfund site) and most are below the regional background of 2.1 pCi/g.

The following table summarizes these data.

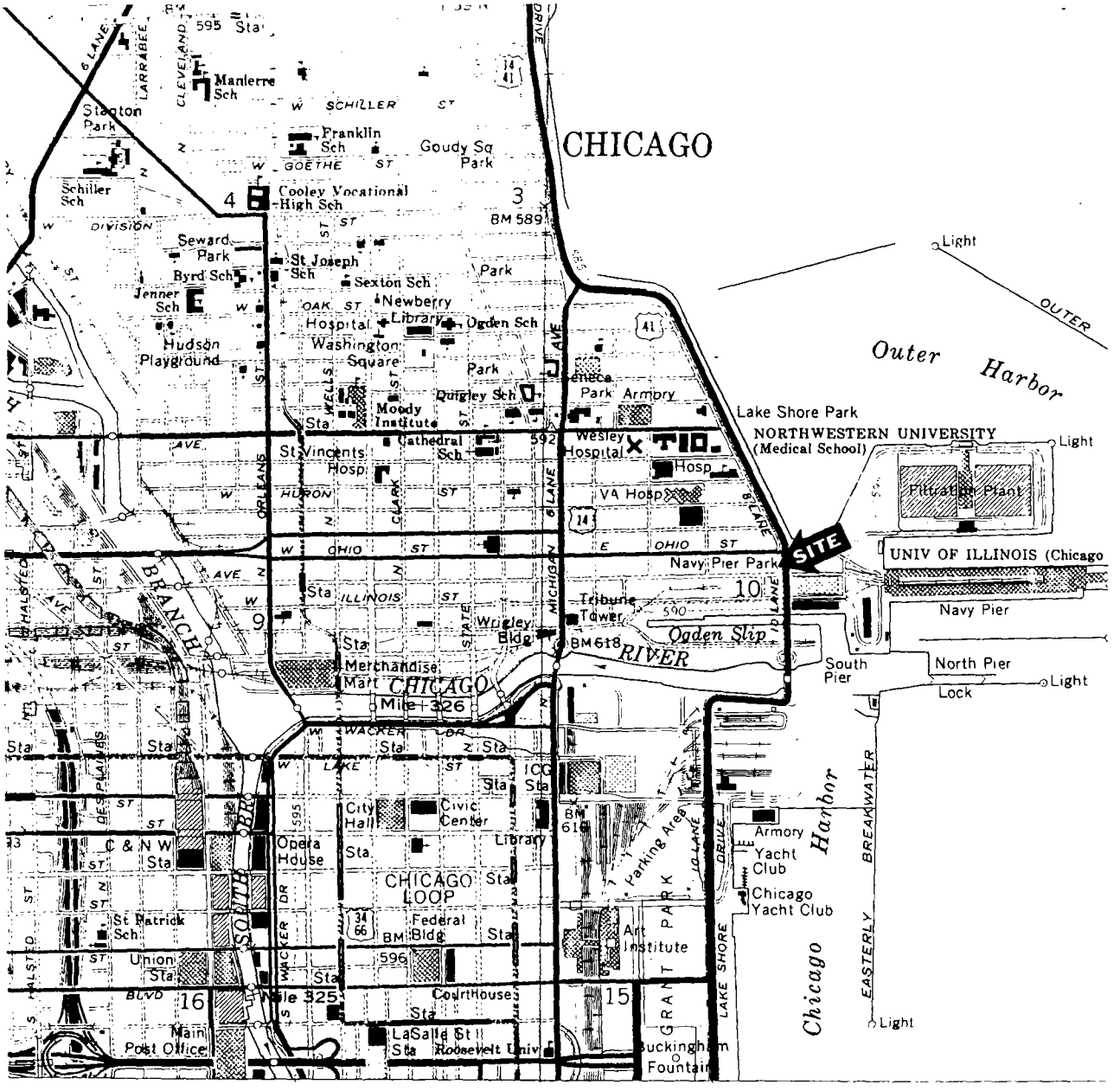
Sample Grid Location	Column Designation	Field Gamma Reading (CPM)	Total Radium* (pCi/g)
B-10/B-11	B-9	16,400	2.83
B-11/B-12	B-10	15,200	1.76
A-7/A-8	A-6	14,300	1.13
A-2.5	A-2	14,500	1.11
A-12.5	A-13	13,000	0.85
B-7.5	B-6	13,300	0.59

* Total radium measured using Pb-214 as surrogate for Ra-226 and Ac-228 as surrogate for Ra-228.

CONCULSIONS

No evidence of radiologically impacted soil above the USEPA specified cleanup levels at the Subject Site was noted in surface walkover surveys, in pothole test pits, nor in samples submitted for gamma spec laboratory analysis. In addition, the total radium readings from the gamma spec analyses indicate that the Subject Site has not been impacted by thorium or uranium wastes from the historic Lindsay Light operations in the area of the Subject Site.

STS recommends this report be submitted to USEPA and a request be made that no further investigation or remediation is necessary with regard to radiological issues at this property.



STS Consultants, Ltd.	Figure 1 Site Location Map 530 North Lake Shore Drive STS Project No. 1-32194-XH	Date of Map: August 27, 2001 Approximate Scale: 1:24,000

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
A	10,000	8,500	9,700	8,000	8,700	STAIRS	6,900	7,200	8,200	7,800	7,800	8,400	8,400	7,000	8,000
B	8,500	8,100	9,200	8,100	8,500	7,900	8,400	8,100	7,300	7,900	7,900	7,900	8,500	7,500	7,900
C	7,000	8,400	8,500	8,500	8,500	7,900	8,400	7,100	7,100	8,000	7,800	7,800	7,600	7,000	7,300
D	8,000	8,300	7,900	8,600	7,900	8,100	7,500	7,300	7,300	7,200	7,500	7,800	7,500	7,100	7,100
E	7,900	8,800	9,100	7,900	9,100	9,200	8,700	7,200	7,100	6,900	8,900	7,300	7,900	7,600	
F	8,000	8,500	9,200	8,600	9,500	9,600	7,700	7,800	6,900	6,800	7,500	7,400	7,600	7,500	
G	8,000	9,800	9,200	10,000	10,000	8,900	7,500	8,600	6,700	7,000	6,400				

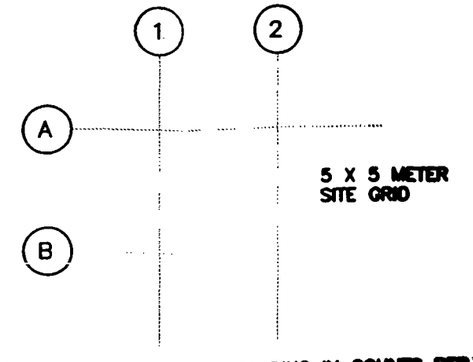
LAKE SHORE DRIVE

EAST GRAND AVENUE

NORTH

SCALE IN METERS
0 5M

SCALE IN FEET
0 20'



7600 MAXIMUM GAMMA READING IN COUNTS PER MINUTE MEASURED IN 5X5M GRID CELL

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CHECKED BY RGB DATE 8-25-01
APPROVED BY RGB DATE 8-25-01
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08/24/2001 13:

GAMMA SURVEY READINGS
AFTER ASPHALT REMOVAL
BEFORE CONCRETE REMOVAL
530 N. LAKE SHORE DRIVE
CHICAGO, ILLINOIS

STS Consultants Ltd.
Consulting Engineers

PROJECT NO. 32194-XH
FILE
SHOWN
2A

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
A	11,000	10,000	8,400	8,100	9,100	9,000	7,600	7,300	11,100	10,300	11,400	11,100	10,500	9,700	8,500
B	9,700	8,300	9,100	8,000	8,900	8,600	8,200	7,500	9,500	10,400	10,800	11,200	10,700	10,600	9,000
C	8,500	7,000	8,200	8,400	8,500	8,200	8,300	8,600	10,400	10,100	10,500	10,200	10,000	10,000	8,500
D	7,900	7,900	8,200	8,300	8,800	8,500	8,800	7,700	9,900	10,600	10,900	10,600	9,100	8,900	
E	7,900	8,900	9,300	9,000	8,000	8,400	8,500	7,600	8,500	9,500	9,700	9,100	8,600	9,000	
F	7,400	8,400	9,200	8,500	9,100	8,200	8,500	8,100	8,100	9,500	9,100	9,100	8,400	8,400	
G	7,400	8,000	8,800	7,800	9,700	8,600	7,300	7,300	9,200	9,500					

NORTH

LAKE SHORE DRIVE

EAST GRAND AVENUE

SCALE IN METERS
0 5M

SCALE IN FEET
0 20'

1 2
A
B

5 X 5 METER
SITE GRID

7600 MAXIMUM GAMMA READING IN COUNTS PER MINUTE MEASURED IN 5X5M GRID CELL

GAMMA SURVEY READINGS
AFTER ASPHALT REMOVAL
AFTER CONCRETE REMOVAL
530 N. LAKE SHORE DRIVE
CHICAGO, ILLINOIS

		DATE
DRAWN BY	KKB	8-24-01
CHECKED BY	RGB	8-25-01
APPROVED BY	RGB	8-25-01

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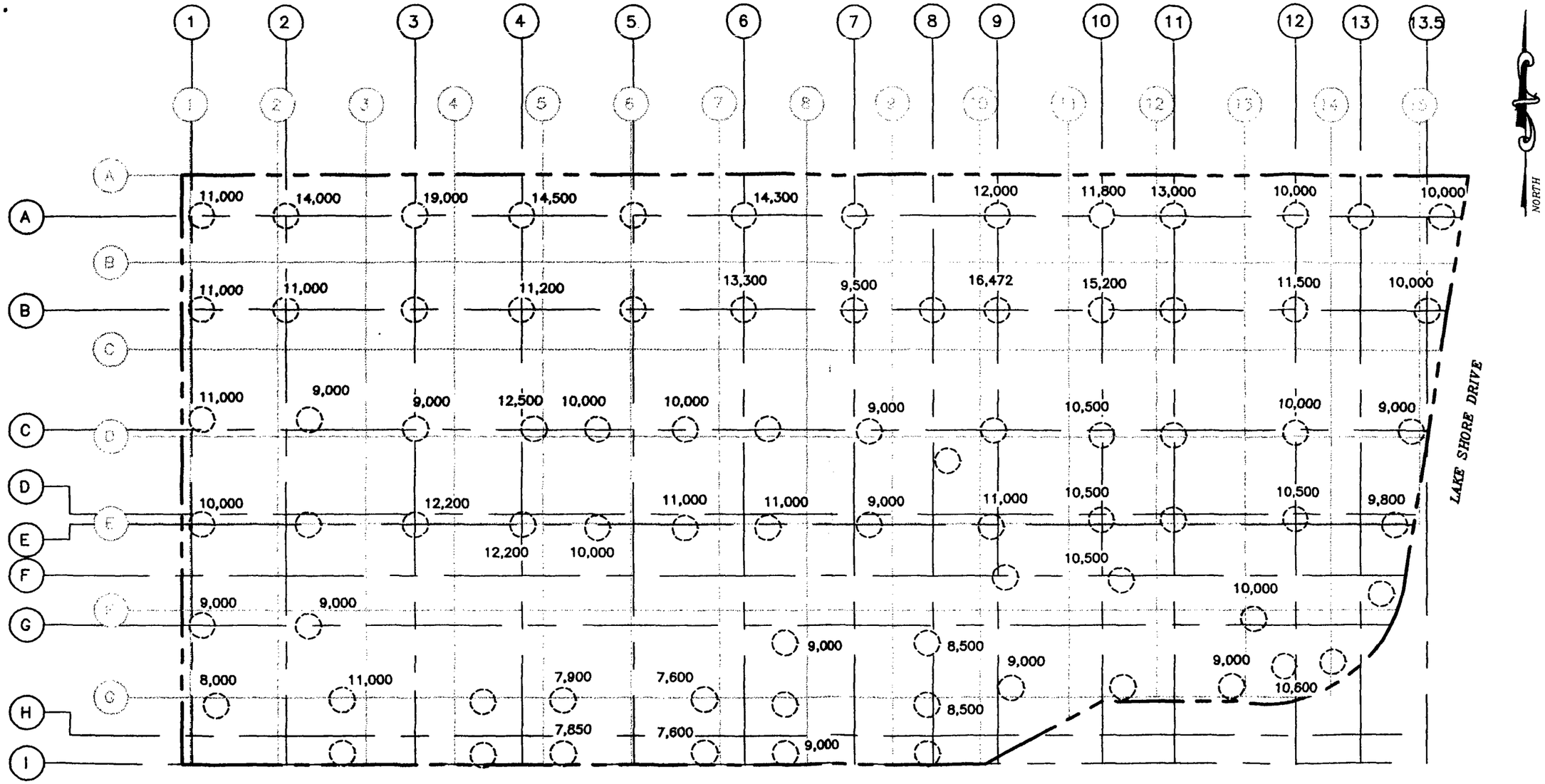
08/24/2001 13:

STS Consultants Ltd.
Consulting Engineers

STS PROJECT NO. 32194-XH
STS PROJECT FILE
SCALE SHOWN
SHEET NO. 2B



CAISSON COLUMN NUMBERS

5 METER SITE GRID NUMBERS

10,500 CAISSON LOCATION WITH MAXIMUM GAMMA READING FROM POTHOLE TEST PIT EXCAVATION SPOIL IN COUNTS PER MINUTE

SCALE IN METERS 0 5M

SCALE IN FEET 0 20'

CAISSON LOCATION DIAGRAM
530 N. LAKE SHORE DRIVE
CHICAGO, ILLINOIS

DRAWN BY KKB	CHECKED BY	APPROVED BY RGB
DATE 8-24-01	DATE	DATE 8-24-01

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08/27/2001 15:

STS Consultants Ltd.
Consulting Engineers

STS PROJECT NO. 32194-XH

STS PROJECT FILE GG-132194XH-CAISSON.dwg

SCALE SHOWN

FIGURE NO. 3

APPENDIX A

RSSI High Resolution Gamma Spectroscopy Analysis

Quantum Technology
GDR_C Nuclide Activity Summary

Sample ID: 012924 B-10&11 530 N. Lake Shore

Sample Size . . . . . 6.19e+002 g	Spectrum File . . h:\pcaspec\012924.spm
Sampling Start. 00-00-00 00:00	Counting Start. 00-00-00 00:00
Sampling Stop 00-00-00 00:00	Buildup Time. . . . . 0.00e+000 Hrs
Current Date. 00-00-00 00:00	Decay Time [OFF]. . . . . 0.00e+000 Hrs
Efficiency File.H:\GDR\EFF\500MAR.EFF	Library File. . . H:\GDR\LIB\UTHACK.LIB
ID. . . . . .500 ml Marinelli	ID. . . .U, Th, & Ac Natural Series + K

Eff.= 1/[7.31e-002*En^-2.40e+000 + 7.89e+001*En^8.95e-001] 02-01-01 12:00

Gamma Fraction Limit >= . . . 10.00 %	Decay Limit <=. . . . 8.000 Halflives
Library Energy Tolerance. . . 2.50	

FINAL ACTIVITY REPORT

Nuclide	Energy (keV)	Conc +- 1.00sigma (uCi/g)	Halflife (hrs)	Peaks Found
Ra-223	94.90	1.12e-006 +-2.48e-007	2.74e+002	1 of 7
U-235	Average:	2.13e-007 +-3.33e-008	6.17e+012	2 of 7
	93.35	2.83e-006 +-6.23e-007		
	185.72	2.06e-007 +-3.34e-008		
Th-234	Average:	4.65e-006 +-7.26e-007	5.78e+002	2 of 3
	92.38	4.62e-006 +-1.02e-006		
	92.80	4.69e-006 +-1.03e-006		
Pb-212	Average:	1.61e-006 +-4.82e-008	1.06e+001	3 of 5
	74.82	1.61e-006 +-2.84e-007		
	77.11	1.61e-006 +-1.86e-007		
	238.63	1.61e-006 +-5.07e-008		
Pb-214	Average:	1.41e-006 +-4.67e-008	4.47e-001	5 of 6
	74.82	1.70e-006 +-4.88e-007		
	77.11	1.67e-006 +-3.20e-007		
	241.98	1.95e-006 +-1.63e-007		
	295.21	1.29e-006 +-9.67e-008		
	351.92	1.37e-006 +-5.77e-008		
Tl-208	Average:	4.17e-007 +-2.62e-008	5.09e-002	3 of 5
	74.97	4.26e-007 +-8.84e-007		
	510.84	3.58e-007 +-9.45e-008		
	583.14	4.22e-007 +-2.73e-008		
Pa-234	94.66	8.03e-007 +-1.77e-007	6.70e+000	1 of 14
Ra-226	186.10	I.D.Only	1.40e+007	1 of 1
Ac-228	Average:	1.42e-006 +-7.20e-008	6.13e+000	3 of 10
	338.32	1.58e-006 +-1.50e-007		
	911.07	1.36e-006 +-9.77e-008		
	969.11	1.41e-006 +-1.52e-007		
Ra-224	240.98	3.70e-006 +-3.09e-007	8.69e+001	1 of 1
Tl-210	298.00	3.14e-007 +-2.35e-008	2.17e-002	1 of 3
Bi-212	727.17	1.02e-006 +-1.57e-007	1.01e+000	1 of 2

Bi-211	351.07	3.94e-006 +-1.66e-007	3.55e-002	1 of	1
Bi-214	Average:	1.40e-006 +-5.06e-008	3.32e-001	3 of	7
	609.31	1.34e-006 +-5.71e-008			
	1120.30	1.67e-006 +-1.72e-007			
	1764.50	1.53e-006 +-1.41e-007			
K-40	1460.80	6.35e-006 +-4.07e-007	1.12e+013	1 of	1

TOTAL: 2.84e-005 uCi/g

UNKNOWN PEAKS

Energy (keV)	Centroid Channel	Net Counts	Un-Certainty	C.L. Counts	Bkg. Counts	FWHM (keV)	Net Gamma/sec
None							

RSSI High Resolution Gamma Spectroscopy Analysis

Quantum Technology
GDR_C Nuclide Activity Summary

Sample ID: 012925 B-11&12 530 N. Lake Shore

Sample Size . . . . . 5.96e+002 g	Spectrum File . . h:\pcaspec\012925.spm
Sampling Start. 00-00-00 00:00	Counting Start. 00-00-00 00:00
Sampling Stop 00-00-00 00:00	Buildup Time. . . . . 0.00e+000 Hrs
Current Date. 00-00-00 00:00	Decay Time [OFF]. . . . . 0.00e+000 Hrs
Efficiency File.H:\GDR\EFF\500MAR.EFF	Library File. . . H:\GDR\LIB\UTHACK.LIB
ID. . . . . .500 ml Marinelli	ID. . . .U, Th, & Ac Natural Series + K

Eff.= 1/[7.31e-002*En^-2.40e+000 + 7.89e+001*En^8.95e-001] 02-01-01 12:00

Gamma Fraction Limit >= . . . 10.00 %	Decay Limit <=. . . . 8.000 Halflives
Library Energy Tolerance. . . 2.50	

FINAL ACTIVITY REPORT

Nuclide	Energy (keV)	Conc +- 1.00sigma (uCi/g)	Halflife (hrs)	Peaks Found
U-235	185.72	2.03e-007 +-3.23e-008	6.17e+012	1 of 7
Pb-212	238.63	5.15e-007 +-4.59e-008	1.06e+001	1 of 5
Pb-214	Average:	1.02e-006 +-4.58e-008	4.47e-001	2 of 6
	295.21	9.77e-007 +-8.55e-008		
	351.92	1.03e-006 +-5.42e-008		
Tl-208	Average:	1.64e-007 +-2.24e-008	5.09e-002	2 of 5
	510.84	3.03e-007 +-8.13e-008		
	583.14	1.53e-007 +-2.33e-008		
Ra-226	186.10	I.D.Only	1.40e+007	1 of 1
Ac-228	Average:	7.39e-007 +-6.57e-008	6.13e+000	2 of 10
	338.32	8.41e-007 +-1.40e-007		
	911.07	7.10e-007 +-7.45e-008		
Ra-224	240.98	5.82e-006 +-5.18e-007	8.69e+001	1 of 1
Tl-210	298.00	2.37e-007 +-2.08e-008	2.17e-002	1 of 3
Bi-211	351.07	2.97e-006 +-1.56e-007	3.55e-002	1 of 1
Bi-214	Average:	9.39e-007 +-4.58e-008	3.32e-001	3 of 7
	609.31	9.13e-007 +-4.98e-008		
	1120.30	9.81e-007 +-1.84e-007		
	1764.50	1.16e-006 +-1.52e-007		
K-40	1460.80	1.89e-005 +-5.73e-007	1.12e+013	1 of 1
TOTAL:		3.15e-005 uCi/g		

UNKNOWN PEAKS

Energy (keV)	Centroid Channel	Net Counts	Un-Certainty	C.L. Counts	Bkg. Counts	FWHM (keV)	Net Gamma/sec
None							

RSSI High Resolution Gamma Spectroscopy Analysis

Quantum Technology
GDR_C Nuclide Activity Summary

Sample ID: 012926 A-2.5 530 N. Lake Shore

Sample Size . . . . . 9.71e+002 g	Spectrum File . . h:\pcaspec\012926.spm
Sampling Start. 00-00-00 00:00	Counting Start. 00-00-00 00:00
Sampling Stop 00-00-00 00:00	Buildup Time. . . . . 0.00e+000 Hrs
Current Date. 00-00-00 00:00	Decay Time [OFF]. . . . . 0.00e+000 Hrs
Efficiency File.H:\GDR\EFF\500MAR.EFF	Library File. . . H:\GDR\LIB\UTHACK.LIB
ID. . . . . .500 ml Marinelli	ID. . . .U, Th, & Ac Natural Series + K

Eff.= 1/[7.31e-002*En^-2.40e+000 + 7.89e+001*En^8.95e-001] 02-01-01 12:00

Gamma Fraction Limit >= . . . 10.00 %	Decay Limit <=. . . . 8.000 Halflives
Library Energy Tolerance. . . 2.50	

FINAL ACTIVITY REPORT

Nuclide	Energy (keV)	Conc +- 1.00sigma (uCi/g)	Halflife (hrs)	Peaks Found
U-235	185.72	1.02e-007 +-1.79e-008	6.17e+012	1 of 7
Pb-212	238.63	4.37e-007 +-2.86e-008	1.06e+001	1 of 5
Pb-214	Average:	6.28e-007 +-2.65e-008	4.47e-001	3 of 6
	241.98	6.01e-007 +-1.12e-007		
	295.21	6.53e-007 +-5.47e-008		
	351.92	6.21e-007 +-3.15e-008		
Tl-208	Average:	1.15e-007 +-1.30e-008	5.09e-002	2 of 5
	510.84	9.70e-008 +-5.10e-008		
	583.14	1.16e-007 +-1.35e-008		
Ra-226	186.10	I.D.Only	1.40e+007	1 of 1
Ac-228	Average:	4.77e-007 +-4.83e-008	6.13e+000	2 of 10
	338.32	4.67e-007 +-9.30e-008		
	911.07	4.81e-007 +-5.66e-008		
Ra-224	240.98	1.14e-006 +-2.13e-007	8.69e+001	1 of 1
Tl-210	298.00	1.59e-007 +-1.33e-008	2.17e-002	1 of 3
Bi-211	351.07	1.79e-006 +-9.05e-008	3.55e-002	1 of 1
Bi-214	Average:	6.05e-007 +-2.86e-008	3.32e-001	3 of 7
	609.31	5.72e-007 +-3.08e-008		
	1120.30	8.11e-007 +-1.09e-007		
	1764.50	8.06e-007 +-1.06e-007		
K-40	1460.80	9.93e-006 +-3.16e-007	1.12e+013	1 of 1
TOTAL:		1.54e-005 uCi/g		

UNKNOWN PEAKS

Energy (keV)	Centroid Channel	Net Counts	Un-Certainty	C.L. Counts	Bkg. Counts	FWHM (keV)	Net Gamma/sec

RSSI High Resolution Gamma Spectroscopy Analysis

Quantum Technology
GDR_C Nuclide Activity Summary

Sample ID: 012927 A-7&8 530 N. Lake Shore

Sample Size . . . . . 6.44e+002 g	Spectrum File . . h:\pcaspec\012927.spm
Sampling Start. 00-00-00 00:00	Counting Start. 00-00-00 00:00
Sampling Stop 00-00-00 00:00	Buildup Time. . . . . 0.00e+000 Hrs
Current Date. 00-00-00 00:00	Decay Time [OFF]. . . . . 0.00e+000 Hrs
Efficiency File.H:\GDR\EFF\500MAR.EFF	Library File. . . H:\GDR\LIB\UTHACK.LIB
ID. . . . . .500 ml Marinelli	ID. . . .U, Th, & Ac Natural Series + K

Eff.= 1/[7.31e-002*En^-2.40e+000 + 7.89e+001*En^8.95e-001] 02-01-01 12:00

Gamma Fraction Limit >= . . . 10.00 %	Decay Limit <=. . . . 8.000 Halflives
Library Energy Tolerance. . . 2.50	

FINAL ACTIVITY REPORT

Nuclide	Energy (keV)	Conc +- 1.00sigma (uCi/g)	Halflife (hrs)	Peaks Found
U-235	185.72	8.65e-008 +-2.56e-008	6.17e+012	1 of 7
Pb-212	238.63	4.34e-007 +-3.80e-008	1.06e+001	1 of 5
Pb-214	Average:	6.11e-007 +-3.61e-008	4.47e-001	2 of 6
	295.21	6.03e-007 +-6.94e-008		
	351.92	6.14e-007 +-4.23e-008		
Tl-208	583.14	1.84e-007 +-2.01e-008	5.09e-002	1 of 5
Ra-226	186.10	I.D.Only	1.40e+007	1 of 1
Ac-228	Average:	5.19e-007 +-6.22e-008	6.13e+000	2 of 10
	338.32	7.59e-007 +-1.12e-007		
	911.07	4.13e-007 +-7.48e-008		
Ra-224	240.98	4.91e-006 +-4.29e-007	8.69e+001	1 of 1
Tl-210	298.00	1.47e-007 +-1.69e-008	2.17e-002	1 of 3
Bi-211	351.07	1.77e-006 +-1.22e-007	3.55e-002	1 of 1
Bi-214	Average:	6.47e-007 +-3.99e-008	3.32e-001	2 of 7
	609.31	6.19e-007 +-4.16e-008		
	1764.50	9.65e-007 +-1.41e-007		
K-40	1460.80	6.19e-006 +-3.59e-007	1.12e+013	1 of 1
TOTAL:		1.55e-005 uCi/g		

UNKNOWN PEAKS

Energy (keV)	Centroid Channel	Net Counts	Un-Certainty	C.L. Counts	Bkg. Counts	FWHM (keV)	Net Gamma/sec
None							

RSSI High Resolution Gamma Spectroscopy Analysis

Quantum Technology
GDR_C Nuclide Activity Summary

Sample ID: 012928 B-7.5 530 N. Lake Shore

Sample Size . . . . . 4.16e+002 g	Spectrum File . . h:\pcaspec\012928.spm
Sampling Start. 00-00-00 00:00	Counting Start. 00-00-00 00:00
Sampling Stop 00-00-00 00:00	Buildup Time. . . . . 0.00e+000 Hrs
Current Date. 00-00-00 00:00	Decay Time [OFF]. . . . . 0.00e+000 Hrs
Efficiency File.H:\GDR\EFF\500MAR.EFF	Library File. . . H:\GDR\LIB\UTHACK.LIB
ID. . . . . .500 ml Marinelli	ID. . . .U, Th, & Ac Natural Series + K

Eff.= 1/[7.31e-002*En^-2.40e+000 + 7.89e+001*En^8.95e-001] 02-01-01 12:00

Gamma Fraction Limit >= . . . 10.00 %	Decay Limit <=. . . . 8.000 Halflives
Library Energy Tolerance. . . 2.50	

FINAL ACTIVITY REPORT

Nuclide	Energy (keV)	Conc +- 1.00sigma (uCi/g)	Halflife (hrs)	Peaks Found
Pb-212	238.63	4.24e-007 +-5.28e-008	1.06e+001	1 of 5
Pb-214	Average:	5.93e-007 +-4.64e-008	4.47e-001	3 of 6
	241.98	2.52e-006 +-3.15e-007		
	295.21	6.07e-007 +-9.10e-008		
	351.92	5.29e-007 +-5.47e-008		
Tl-208	583.14	1.48e-007 +-2.31e-008	5.09e-002	1 of 5
Ra-224	240.98	4.79e-006 +-5.97e-007	8.69e+001	1 of 1
Tl-210	298.00	1.47e-007 +-2.21e-008	2.17e-002	1 of 3
Bi-211	351.07	1.52e-006 +-1.57e-007	3.55e-002	1 of 1
Bi-214	609.31	4.43e-007 +-4.75e-008	3.32e-001	1 of 7
K-40	1460.80	6.16e-006 +-5.07e-007	1.12e+013	1 of 1
TOTAL:		1.42e-005 uCi/g		

UNKNOWN PEAKS

Energy (keV)	Centroid Channel	Net Counts	Un-Certainty	C.L. Counts	Bkg. Counts	FWHM (keV)	Net Gamma/sec
None							

RSSI High Resolution Gamma Spectroscopy Analysis

Quantum Technology
GDR_C Nuclide Activity Summary

Sample ID: 012929 a-12.5 530 N. Lake Shore

Sample Size . . . . . 7.98e+002 g	Spectrum File . . h:\pcaspec\012929.spm
Sampling Start. 00-00-00 00:00	Counting Start. 00-00-00 00:00
Sampling Stop 00-00-00 00:00	Buildup Time. . . . . 0.00e+000 Hrs
Current Date. 00-00-00 00:00	Decay Time [OFF]. . . . . 0.00e+000 Hrs
Efficiency File.H:\GDR\EFF\500MAR.EFF	Library File. . . H:\GDR\LIB\UTHACK.LIB
ID. . . . . .500 ml Marinelli	ID. . . .U, Th, & Ac Natural Series + K

Eff.= 1/[7.31e-002*En^-2.40e+000 + 7.89e+001*En^8.95e-001] 02-01-01 12:00

Gamma Fraction Limit >= . . . 10.00 %	Decay Limit <=. . . . 8.000 Halflives
Library Energy Tolerance. . . 2.50	

FINAL ACTIVITY REPORT

Nuclide	Energy (keV)	Conc +- 1.00sigma (uCi/g)	Halflife (hrs)	Peaks Found
Pb-212	238.63	2.75e-007 +-2.94e-008	1.06e+001	1 of 5
Pb-214	Average:	4.41e-007 +-2.77e-008	4.47e-001	2 of 6
	295.21	5.00e-007 +-6.11e-008		
	351.92	4.25e-007 +-3.11e-008		
Tl-208	583.14	1.13e-007 +-1.49e-008	5.09e-002	1 of 5
Ac-228	Average:	4.11e-007 +-4.36e-008	6.13e+000	2 of 10
	338.32	5.23e-007 +-9.07e-008		
	911.07	3.78e-007 +-4.97e-008		
Ra-224	240.98	3.10e-006 +-3.32e-007	8.69e+001	1 of 1
Tl-210	298.00	1.22e-007 +-1.49e-008	2.17e-002	1 of 3
Bi-211	351.07	1.22e-006 +-8.94e-008	3.55e-002	1 of 1
Bi-214	609.31	4.57e-007 +-3.11e-008	3.32e-001	1 of 7
K-40	1460.80	8.44e-006 +-3.41e-007	1.12e+013	1 of 1
TOTAL:		1.46e-005 uCi/g		

UNKNOWN PEAKS

Energy (keV)	Centroid Channel	Net Counts	Un-Certainty	C.L. Counts	Bkg. Counts	FWHM (keV)	Net Gamma/sec
None							